

What is claimed is:

1. A compensating advanced feature patch panel that can include removable modular or fixed electronic components, wherein the patch panel provides improved performance levels, said patch panel comprising:

a multilayered patch panel printed circuit board comprising a plurality of layers;

a communication circuit disposed on at least a first layer of said plurality and electrically coupled between an insulation displacement connector (IDC) at a PD/User end and an RJ45 connector at a telecommunication equipment end;

at least one of a removable modular or fixed electronic component electrically coupled with said communication circuit, said component comprised of at least one active circuit disposed on at least a second layer of said plurality to provide an advanced feature; and

a compensating separation mechanism comprised of at least a third layer of said plurality and disposed between said first and second layers to isolate said active circuit from said communication circuit and to substantially minimize at least one adverse effect resulting from said active circuit and thereby providing improved performance levels.

2. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 1, wherein said communication circuit includes at least one of a signal carrying trace or a telecommunication routing circuit.

3. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 1, wherein said advanced feature includes at least one of a device detection feature, logical operation feature and power insertion feature.

4. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 1, wherein said active circuit includes at least one of an active circuit secondary routing layer, active circuit component, IDC component, plug-in module connector and primary routing for active circuitry.

5. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 4, wherein said active circuit component includes at least one DC blocking capacitor.

6. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 4, wherein said active circuit component includes at least one center-tapped transformer.

7. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 4, wherein said active circuit component includes at least one operational amplifier.

8. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 1, wherein said third layer includes at least one of a core layer, prepreg layer, ground plane layer and voltage plane layer.

9. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 1, wherein said adverse effect includes at least one of an increased noise level, reflection, adverse inductive coupling and adverse capacitive coupling.

10. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 1, wherein said improved

performance levels include at least one of a category 3, 5, 5e, 6, 6e and 7 performance levels and higher.

11. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 1, wherein said multilayered patch panel printed circuit board further comprises a 3U panel size having at least 48 ports.

12. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 1, wherein said multilayered patch panel printed circuit board further consists of a panel having at least 48 ports and at least one of a height dimension of 1U, 2U and 3U.

13. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 1, wherein said multilayered patch panel printed circuit board further comprises a cable management mechanism.

14. A compensating advanced feature patch panel that can include removable modular or fixed electronic components as claimed in claim 1, wherein said multilayered patch panel printed circuit board further comprises said active circuit and cable management mechanism arranged adjacent to and between said communication circuit upon a surface of said patch panel printed circuit board.

15. A method of making an advanced feature patch panel that can include removable modular or fixed electronic components which are separately or in combination capable of providing advanced features such as device detection and power insertion, wherein the patch panel provides improved performance levels, said method comprising the steps of:

assembling a multilayered patch panel printed circuit board having a plurality of layers;

disposing upon at least a first layer of said plurality a communication circuit, said communication circuit electrically coupled between an insulation displacement connector (IDC) at a PD/User end and an RJ45 connector at a telecommunication equipment end;

disposing upon at least a second layer of said plurality at least one of a removable modular and fixed electronic component electrically coupled with said communication circuit, said component comprised of at least one active circuit for use in providing an advanced feature; and

isolating said first layer from said second layer via a compensating separation mechanism comprised of at least a third layer of said plurality disposed between said first and second layer to isolate said active circuit from said communication circuit and substantially minimize at least one adverse effect resulting from said active circuit and thereby providing improved performance levels.

16. A method of making an advanced feature patch panel as claimed in claim 15, further comprising the step of disposing upon said first layer of said plurality a communication circuit including at least one of a signal carrying trace or a communication routing circuit.

17. A method of making an advanced feature patch panel as claimed in claim 15, further comprising the step of disposing upon said second layer of said plurality at least one of a removable modular or fixed electronic component including at least one of an active circuit secondary routing layer, active circuit component, IDC component, plug-in module connector and primary routing for active circuitry.

18. A method of making an advanced feature patch panel as claimed in claim 17, wherein said active circuit component includes at least one DC blocking capacitor.

19. A method of making an advanced feature patch panel as claimed in claim 17, wherein said active circuit component includes at least one center-tapped transformer.

20. A method of making an advanced feature patch panel as claimed in claim 17, wherein said active circuit component includes at least one operational amplifier.

21. A method of making an advanced feature patch panel as claimed in claim 15, wherein said third layer includes at least one of a core layer, prepreg layer, ground plane layer and voltage plane layer.

22. A method of making an advanced feature patch panel as claimed in claim 21, wherein said isolating said first layer from said second layer further comprises the steps of:

positioning at least one voltage plane layer adjacent to said second layer in said multilayer patch panel printed circuit board assembly;

positioning at least one ground plane layer adjacent to said first layer in said multi-layer patch panel printed circuit board assembly; and

separating each said layer in said plurality by at least one of a prepreg layer and a core layer.

23. A method of making an advanced feature patch panel as claimed in claim 21, wherein said isolating said first layer from said second layer further comprises the steps of:

positioning at least one ground plane layer adjacent to said second layer in said multilayer patch panel printed circuit board assembly;

positioning at least one ground plane layer adjacent to said first layer in said multi-layer patch panel printed circuit board assembly; and

separating each said layer in said plurality by at least one of a prepreg layer and a core layer.

24. A method of making an advanced feature patch panel as claimed in claim 15, wherein said adverse effect includes at least one of an increased noise level, reflection, adverse inductive coupling and adverse capacitive coupling.

25. A method of making an advanced feature patch panel as claimed in claim 15, wherein said improved performance levels include at least one of a category 3, 5, 5e, 6, 6e and 7 performance levels and higher.